

Configure TTC chain 2 Nominal after XPND1 or TWTAl failure
 File: H_CRP_TTC_T2N.xls
 Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to configure TTC chain 2 Nominal and TTC Chain 1 Not Failed after an XPND1 or TWTAl failure.

This allows to re-establish the TTC chain redundancy after an onboard TTC Chain 2 to 1 switchover

Summary of Constraints

It is necessary to mark the TTC Chain 2 as Nominal and the TTC Chain 1 as Not failed in the "Unit in Use" table. Thus the status of the ASW function "FDIR Management" has to be "running".

It is necessary to reenable the entries in the Event-Action Table (EAT) through TC(19,4), thus the status of the ASW function "Event/Action Management" has to be "running".

Spacecraft Configuration

Start of Procedure

CDMU in default configuration.
 Downlink active via TX2 and TWTA2.
 Chain 1 marked as "failed" in UIU table.
 Chain 1 marked as "Nominal" in UIU table.
 Chain 2 marked as "Redundant" & "in use" in UIU table.

End of Procedure

CDMU in default configuration.
 Downlink active via TX2 and TWTA2.
 Chain 1 marked as "not failed" in UIU table.
 Chain 1 marked as "Redundant" in UIU table.
 Chain 2 marked as "Nominal" & "in use" in UIU table.

Reference File(s)

Input Command Sequences

Output Command Sequences

HRRT2N

Referenced Displays

ANDs GRDs SLDs
 ZA27M999

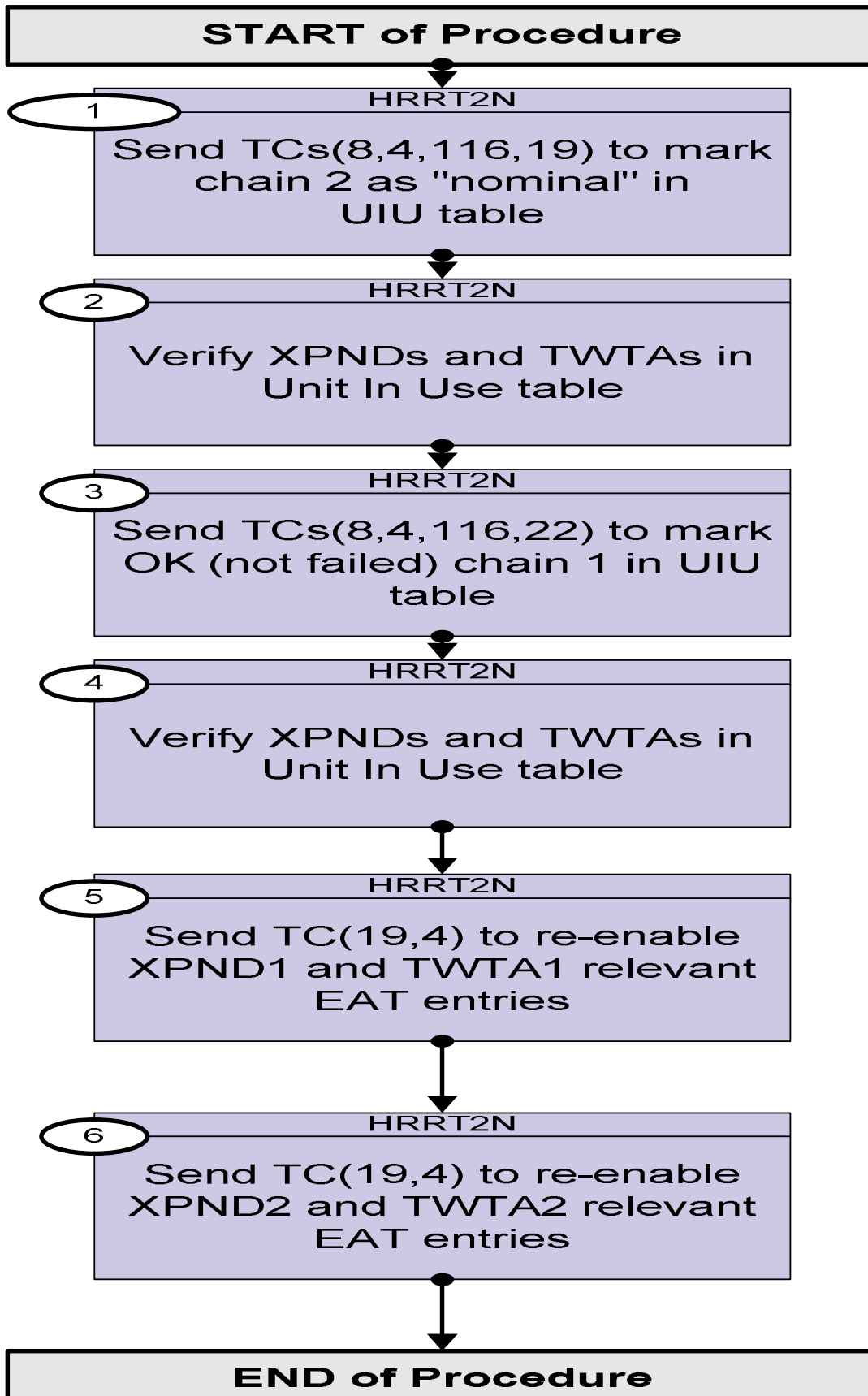
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
22/09/08		1	Created	E. Picallo	
09/01/09	2	2	CDMU ASW V3.8 and BSW V2.4 alignment	E. Picallo	
20/04/09	2.3	3	First select TTC chain 2 Nominal then mark OK TTC chain 1	E. Picallo	

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Procedure Flowchart Overview



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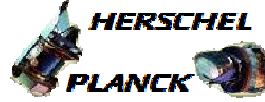
Procedure Flowchart Overview

Configure TTC chain 2 Nominal after XPND1 or TWTA1 failure
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
TC Seq. Name : HRRT2N (Tx2+TWTA2 Nominal) Configure TTC chain 2 Nominal after XPND1 or TWTA1 failure TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
1		Send TCs(8,4,116,19) to mark chain 2 as "nominal" in UIU table		Next Step: 2
		Execute Telecommand <p style="text-align: right;">SelNomUnitB_XpndRx</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : Fdir Select Nominal Unit B XPND RX, TC(8,4,116,19)	DC71G170	
2		Verify XPNDs and TWTAs in Unit In Use table		Next Step: 3
2.1		XPND2 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry <p style="text-align: right;">XpndRx2FuncSts DEL62170</p> <p style="text-align: right;">= On</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndRx2Use DEL60170</p> <p style="text-align: right;">= In_Use</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndRx2LogSts DEL61170</p> <p style="text-align: right;">= Nominal</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndRx2FailSts DEL63170</p> <p style="text-align: right;">= Not_Failed</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndTx2FuncSts DEL31170</p> <p style="text-align: right;">= On</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndTx2Use DEL33170</p> <p style="text-align: right;">= In_Use</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndTx2LogSts DEL32170</p> <p style="text-align: right;">= Nominal</p>		AND=ZAZ7M999
		Verify Telemetry <p style="text-align: right;">XpndTx2FailSts DEL30170</p> <p style="text-align: right;">= Not_Failed</p>		AND=ZAZ7M999
2.2		TWTA2 UIU table status verification		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Twta2FuncSts DEL23170	= On	AND=ZAZ7M999
		Verify Telemetry Twta2Use DEL25170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Twta2LogSts DEL24170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Twta2FailSts DEL22170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc2FuncSts DEG29170	= On	AND=ZAZ7M999
		Verify Telemetry Epc2Use DEG31170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Epc2LogSts DEG30170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Epc2FailSts DEG28170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FuncSts DEH17170	= On	AND=ZAZ7M999
		Verify Telemetry TwtAmp2Use DEH19170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp2LogSts DEH18170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FailSts DEH16170	= Not_Failed	AND=ZAZ7M999
2.3		XPND1 UIU table status verification		☐
		Verify Telemetry XpndRx1FuncSts DEL58170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx1Use DEL56170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx1LogSts DEL57170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndRx1FailSts DEL59170	= Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx1FuncSts DEL27170	= Off	AND=ZAZ7M999
		Verify Telemetry XpndTx1Use DEL29170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx1LogSts DEL28170	= Redundant	AND=ZAZ7M999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry XpndTx1FailSts DEL26170	= Failed	AND=ZAZ7M999
2.4		TWTAl UIU table status verification		☐
		Verify Telemetry TwtalFuncSts DEL19170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtalUse DEL21170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtalFailSts DEL18170	= Failed	AND=ZAZ7M999
		Verify Telemetry Epc1FuncSts DEG25170	= Off	AND=ZAZ7M999
		Verify Telemetry Epc1Use DEG27170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry Epc1LogSts DEG26170	= Redundant	AND=ZAZ7M999
		Verify Telemetry Epc1FailSts DEG24170	= Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmplFuncSts DEH13170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtAmplUse DEH15170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmplLogSts DEH14170	= Redundant	AND=ZAZ7M999
		Verify Telemetry TwtAmplFailSts DEH12170	= Failed	AND=ZAZ7M999
3		Send TCs(8,4,116,22) to mark OK (not failed) chain 1 in UIU table		Next Step: 4
		Mark Unit OK telecommand is used to modify the health status of a unit as OK. Note that for XPND TX, XPND RX, TWT assembly, TWT amplifier, and EPC the Failed / Not Failed configuration status is common.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand MarkOKUnitA_XpndRx TC Control Flags : Subsch. ID : 10 Det. descr. : Fdir Mark OK Unit A XPND RX, TC(8,4,116,22) GBM IL DSE --Y -- --	DCB0H170	
4		Verify XPNDs and TWTAs in Unit In Use table		Next Step: 5
4.1		XPND2 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry XpndRx2FuncSts DEL62170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx2Use DEL60170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx2LogSts DEL61170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndRx2FailSts DEL63170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx2FuncSts DEL31170	= On	AND=ZAZ7M999
		Verify Telemetry XpndTx2Use DEL33170	= In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx2LogSts DEL32170	= Nominal	AND=ZAZ7M999
		Verify Telemetry XpndTx2FailSts DEL30170	= Not_Failed	AND=ZAZ7M999
4.2		TWTA2 UIU table status verification		<input type="checkbox"/>
		Verify Telemetry Twta2FuncSts DEL23170	= On	AND=ZAZ7M999
		Verify Telemetry Twta2Use DEL25170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Twta2LogSts DEL24170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Twta2FailSts DEL22170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry Epc2FuncSts DEG29170	= On	AND=ZAZ7M999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Epc2Use DEG31170	= In_Use	AND=ZAZ7M999
		Verify Telemetry Epc2LogSts DEG30170	= Nominal	AND=ZAZ7M999
		Verify Telemetry Epc2FailSts DEG28170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FuncSts DEH17170	= On	AND=ZAZ7M999
		Verify Telemetry TwtAmp2Use DEH19170	= In_Use	AND=ZAZ7M999
		Verify Telemetry TwtAmp2LogSts DEH18170	= Nominal	AND=ZAZ7M999
		Verify Telemetry TwtAmp2FailSts DEH16170	= Not_Failed	AND=ZAZ7M999
4.3		XPND1 UIU table status verification		□
		Verify Telemetry XpndRx1FuncSts DEL58170	= On	AND=ZAZ7M999
		Verify Telemetry XpndRx1Use DEL56170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndRx1LogSts DEL57170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndRx1FailSts DEL59170	= Not_Failed	AND=ZAZ7M999
		Verify Telemetry XpndTx1FuncSts DEL27170	= Off	AND=ZAZ7M999
		Verify Telemetry XpndTx1Use DEL29170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry XpndTx1LogSts DEL28170	= Redundant	AND=ZAZ7M999
		Verify Telemetry XpndTx1FailSts DEL26170	= Not_Failed	AND=ZAZ7M999
4.4		TWTAl UIU table status verification		□
		Verify Telemetry TwtalFuncSts DEL19170	= Off	AND=ZAZ7M999
		Verify Telemetry TwtalUse DEL21170	= Not_In_Use	AND=ZAZ7M999
		Verify Telemetry TwtalLogSts DEL20170	= Redundant	AND=ZAZ7M999

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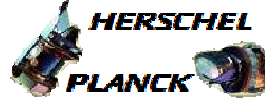
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																											
		Verify Telemetry Twta1FailSts DEL18170	= Not_Failed	AND=ZAZ7M999																											
		Verify Telemetry Epc1FuncSts DEG25170	= Off	AND=ZAZ7M999																											
		Verify Telemetry Epc1Use DEG27170	= Not_In_Use	AND=ZAZ7M999																											
		Verify Telemetry Epc1LogSts DEG26170	= Redundant	AND=ZAZ7M999																											
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		Verify Telemetry TwtAmp1FailSts DEH12170	= Not_Failed	AND=ZAZ7M999																											
5		Send TC(19,4) to re-enable XPND1 and TWTA1 relevant EAT entries		Next Step: 6																											
		<p>When this request is received, the action-telecommand associated with the corresponding event shall be enabled. In the TC(19,4) it is necessary to set the following parameters:</p> <p>N, number of events to be enabled. APID, identifier of the Application Process generating this event report, in this case always equal to 16 (CDMU). Event ID, identifier of the event to be enabled, in this case equal to: 37400 & 37416 (TWTA1 failure), 37402 (XPND1 RX failure), 160 (XPND1 invalid RT).</p>																													
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableActions</p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>N_Repetition</td> <td>DH041170</td> <td>4 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37400 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37402 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37416 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>160 <dec></td> </tr> </table> <p>TC Control Flags :</p>	N_Repetition	DH041170	4 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37400 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37402 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37416 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	160 <dec>	DCT84170	
N_Repetition	DH041170	4 <dec>																													
APID_for_EAT_TC	DH236170	CDMS (Def)																													
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APID_for_EAT_TC	DH236170	CDMS (Def)																													
EventId	DH146170	160 <dec>																													

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		<p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Enable Actions TC(19,4)</p>																													
6		<p>Send TC(19,4) to re-enable XPND2 and TWTA2 relevant EAT entries</p>		Next Step: END																											
		<p>When this request is received, the action-telecommand associated with the corresponding event shall be enabled. In the TC(19,4) it is necessary to set the following parameters:</p> <p>N, number of events to be enabled. APID, identifier of the Application Process generating this event report, in this case always equal to 16 (CDMU). Event ID, identifier of the event to be enabled, in this case equal to: 37401 & 37417 (TWTA2 failure), 37403 (XPND2 RX failure), 161 (XPND2 invalid RT).</p>																													
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableActions</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">N_Repetition</td> <td style="width: 30%;">DH041170</td> <td style="width: 40%;">4 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37401 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37403 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>37417 <dec></td> </tr> <tr> <td>APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td>EventId</td> <td>DH146170</td> <td>161 <dec></td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Enable Actions TC(19,4)</p>	N_Repetition	DH041170	4 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37401 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37403 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	37417 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	161 <dec>	DCT84170	
N_Repetition	DH041170	4 <dec>																													
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APID_for_EAT_TC	DH236170	CDMS (Def)																													
EventId	DH146170	161 <dec>																													
6.1		<p>Send TC(19,6) to acquire the detection list</p>		<input type="checkbox"/>																											
		<p>Report Event Detection List telecommand is a request for a complete detection list; when this request is received, one or more TM(19,7) are generated.</p>																													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">ReptEvtActTable</p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- --</p> <i>Subsch. ID : 10</i> Det. descr. : TEMPLATE Report The contents of the event/action table TC(19,6)	DCT86170	
6.2		Verify that TM(19,7) have been received and actions related to XPNDs-TWTAs are enabled		☐
		Verify Packet Reception TM 19-7 Event-Action Table Content Report <i>Packet Details:</i> <p style="text-align: right;">APID: 16 Type: 19 Subtype: 7 PI1: PI2:</p>	EvtActTblRpt	
		Verify that the following Event ID are enabled: 37400 & 37416 (TWTA1 failure), 37402 (XPND1 RX failure), 160 (XPND1 invalid RT), 37401 & 37417 (TWTA2 failure), 37403 (XPND2 RX failure), 161 (XPND2 invalid RT).		
End of Procedure				